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ABSTRACT

The teacher needs to be certain that each student is able to read effectively to understand the science subject matter being emphasized in teaching and learning situations. In ongoing lessons and units in science, the teacher must use a variety of approaches, such as: prior to students reading science content, print the new vocabulary on the board clearly; have a good reader read the selection to less able readers; tape record the science text selection to be read; diagnose and remedy weaknesses in learners' reading; use the Big Book method of instruction; use peer reading approaches; assist aides to read the science text orally to the students; let students in committees discuss what has been read to monitor comprehension; use library books instead of science texts; have conferences with students at selected intervals about the library books; and incorporate the latest technology to guide students to read and comprehend well in science subject matter. (NKA)

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Assisting Pupils in Reading Science Subject Matter.

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ASSISTING PUPILS IN READING SCIENCE SUBJECT MATTER

The science teacher has an important responsibility in guiding pupils to read content in science meaningfully. He/she needs to assist pupils to comprehend subject matter and make use of this information in a variety of ways. Much time is wasted in learning if pupils do not understand what has been read. Reading is a major means of obtaining knowledge in science. Reading is necessary to gather information to solve problems in science. The content obtained must reflect higher levels of cognition such as critical and creative thinking in order to be useful in the problem solving arena (1).

Helping Pupils in Reading in Science

In ongoing lessons and units in science, the teacher must have a variety of approaches in the repertoire to help pupils to read well. Which procedures might then be used?

a). Prior to pupils reading science content, print the new vocabulary from the science text on the chalkboard in clear manuscript letters. Go over these words carefully so that they will be recognized when pupils read. Have pupils relate these new words to illustrations in the science text from which they will be reading. Discussing the pictures assists pupils to develop background information for reading so that the related content can be read meaningfully. Learners should also be guided to relate the background information to their own lives personally and to the content to be read (2).

b). Have a good reader read the selection to less able readers as the latter follow along in their own science texts. As the less able readers follow along, they can be guided to identify new and unknown words from the read aloud.

c). Cassette record the science text selection to be read, so that those needing assistance in comprehension and word recognition may identify needed words in context as they follow along in their own textbooks. The oral reading needs to done in a clear voice using a moderate rate of speed so that listeners may follow along successfully when comprehending science ideas.

d). Diagnose and remedy weaknesses in reading of learners. Pupils may need help in the following:

1. phonics and syllabication. Thus, if a pupil does not recognize a word, help may be given so that the learner associates individual graphemes with related phonemes, e. g. rep/tile.The first syllable has letters consistent between individual graphemes and their related phonemes e. g. "r"-- "e"-- "p." The second syllable "tile" is consistent with a rule in that the letter "i" has a long vowel sound due

to being followed by a consonant "l" and ending with a silent sound indicated by the letter "e." This rather consistent rule is written as follows ---consonant/vowel/consonant/silent e, or c/v/c/e. Also, an unknown word may not be new if it is divided into syllables and then put together again as a whole word within a sentence, e . g. am/phib/i/ans. There are four clearly differentiated syllables in this word. The second syllable has the letters "ph" which do not correspond between symbol and sound and rather make the "f" sound. Thus, by dividing an unknown into recognizable parts or syllables, a learner may then identity one or more syllables and then be able to recognize the entire word

2. context clues. Here the pupil is aided to put into a sentence a word, for one not known, that makes sense in relationship to the surrounding words in the sentence. For example, Instead of lungs, fish breathe through the use of _____. The context clues are rather heavy here and the contextual word is "gills." This basically would be the only word that makes sense to fit into the unknown space.

3. configuration clues. The pupil's attention is drawn to the shape or form of the unknown word to notice if clues are provided to determine the correct word. For example, the two words "atoms" and "molecules" are different in length; also, the second word has two taller letters as compared to one taller letter for the first word, among other differences.

4. structural analysis. Sometimes, a pupil does not know a word in reading due to its having an "s" ending such as in the following: chemicals, scales, barometers, and wind vanes. The letter "s" ending does not make for an extra syllable, but indicates a plural noun is involved. Many nouns then show the plural form by adding "s" to the singular. A learner then by looking at a word in reading may be able to identify it by looking to see if a singular changed to a plural noun is in evidence. Possessive case of words, as a further example of structural analysis, do not add another syllable in pronunciation, but rather meanings are changed, such as in the following: cat, cat's, cats'; and microscope, microscope's, and microscopes.' Thus, in changing a word from singular to plural, as well as in indicating possessive case of a noun, the unknown word appears to differ when these changes are made from what was in the repertoire of the learner. Structural analysis of words can assist pupils in identify unknown words as well as attach related meanings.

5. picture clue use. If a pupil does not know a word in reading, he/she may look at the illustration on the same page and possibly identify the unknown.Thus, there is a picture pertaining to the unknown word on the same page as the printed text.

e). use the Big Book method of instruction. The Big Book is large enough in size and print for all classmates to see the words and illustrations. Here, the teacher has pupils look at the related

illustrations and predict what the reading selection in science will contain. The teacher reads the selection aloud as pupils follow the words and sentences being read in their own science texts. Next, pupils together with the teacher read the same selection orally. Rereading may be done as is necessary and/or desired.

f). Use peer reading approaches. Here, peers, two or three in number, may read orally to each other. The others follow along in their own science texts as the peer reads aloud (4). Peer teaching may also be used in that a good reader reads aloud to others in a small group. He/she assists pupils in word recognition and comprehension, as is needed.

g). Assist aides to read orally to pupils in science. The aide needs inservice education to be respectful and helpful to pupils. Pupils may follow along in their science texts as the read aloud activity progresses. They might also read orally to the aide with the latter helping in word recognition as needed (5).

h). Let pupils in committees discuss what has been read from the science text to notice the quality of comprehension of major facts, concepts, and generalizations. Higher levels of cognition such as critical and creative thinking as well as problem solving should also be stressed. As pupils interact with each other, they become actively involved in discussing science content.

i). Use library books instead of science texts for reading and discussing their contents. There should be an ample number of library books available, chosen by the teacher, that relate directly to the science unit being taught. The genres may include content in biology, physics. botany, zoology, geology, astronomy, and chemistry, as well as biographies and autobiographies of well known scientists. Pupils then may individually select a library book to read on his/her reading level. This reading level emphasizes the understanding and meaning level of comprehension. It is not the frustration level, nor the too easy to read boredom level. Challenge for reading must be in the offing!

j). Have conferences with pupils at selected intervals, each of which has read the same library book. Notice comprehension and reading problems of individual learners. Give assistance as needed (6). Library book content may well harmonize with that contained in science texts.

k). Incorporate the latest technology to guide pupils to read and comprehend well in science subject matter. To provide a variety of reading activities directly related to a thematic science unit and at the same time assist pupils to understand subject matter read in an optimal manner, the teacher may guide pupils in the use of CD ROMS, computer software packages, internet, and the World Wide Web. All learning activities used should assist pupils to read more proficiently in the science curriculum (7).

Conclusion

Reading is a major way of learning subject matter in science. The teacher needs to be certain that each pupil is able to read effectively to understand subject matter being emphasized in teaching and learning situations. No pupil should fall through the slats, but each should be given assistance as needed to identify unknown words and comprehend subject matter well (8).

Each learner is unique in needs and interests in reading science content and deserves individual assistance to develop in an optimal manner (9).

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